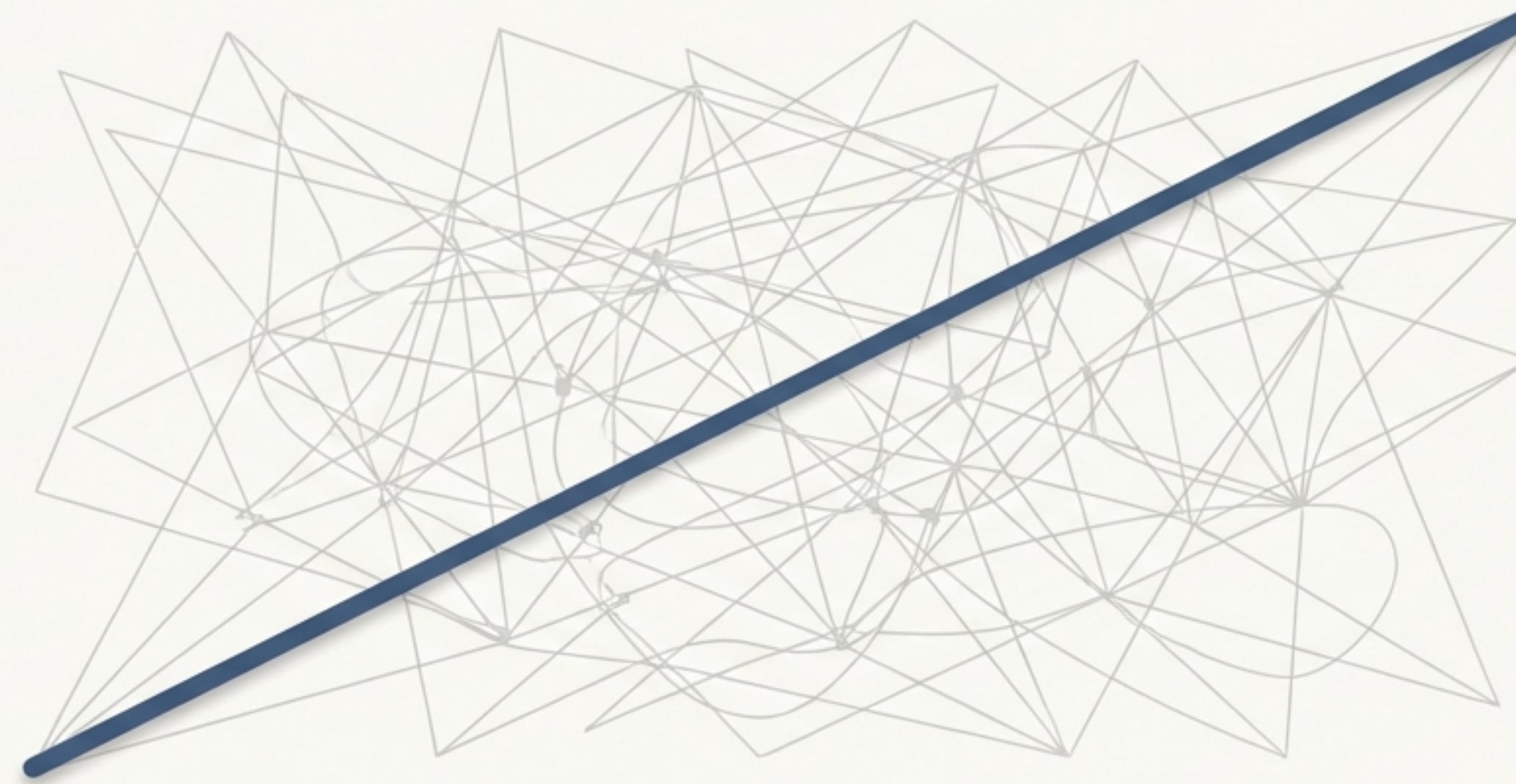


# Regulatory Intelligence Assistant

A G7 GovAI Grand Challenge Submission for Navigating Complex Regulations



An AI-powered system that helps public servants and citizens navigate complex regulatory landscapes through semantic search, natural language Q&A, compliance checking, and guided workflows.

# The Regulatory Maze is a Barrier to Public Service

Public servants and citizens alike face a convoluted web of regulations, policies, and precedents. This complexity leads to delayed decisions, heightened risks of non-compliance, and frustrated citizens unable to access essential services.

## For Public Servants



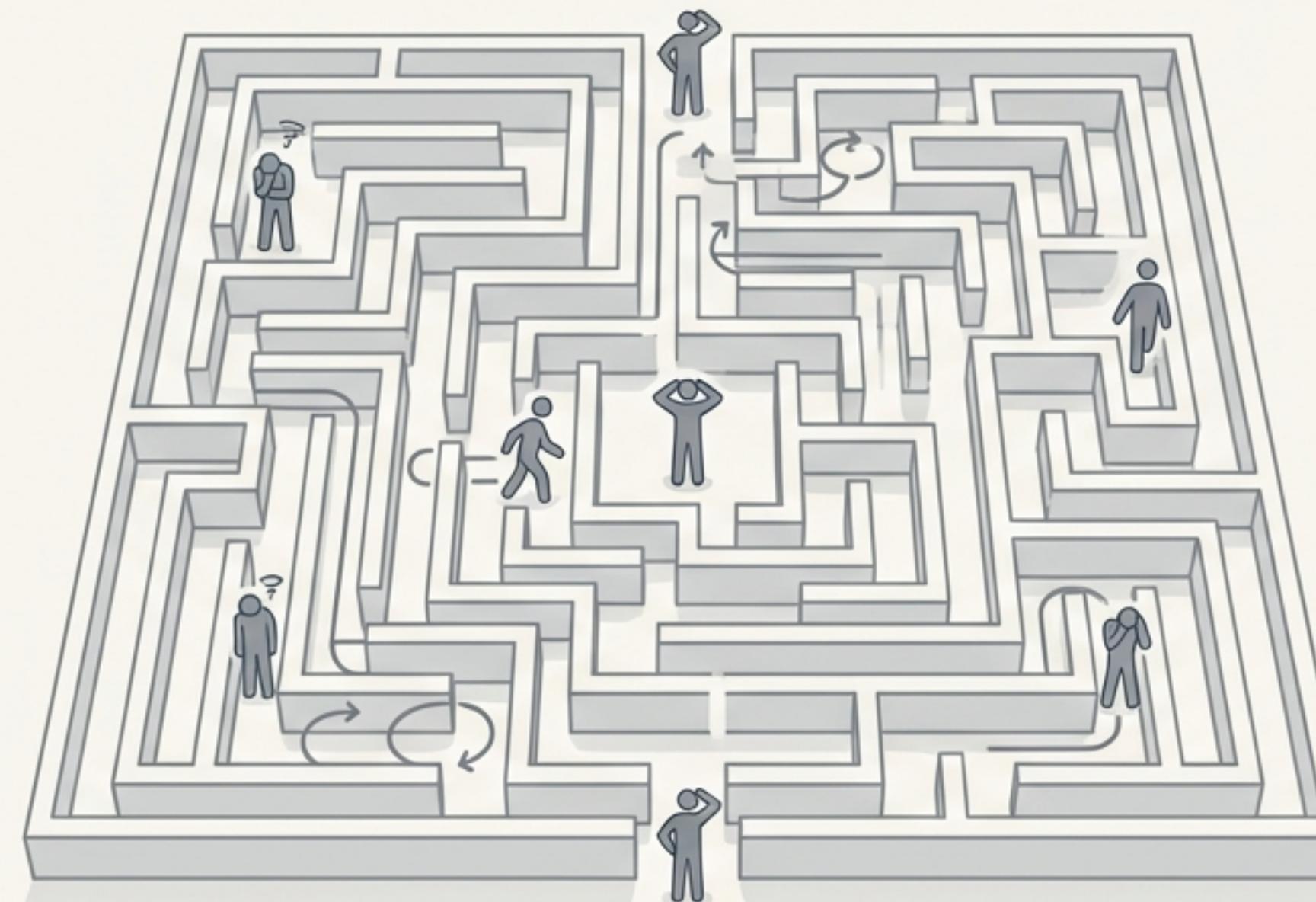
Hours lost  
searching for  
information



Risk of critical  
compliance  
errors



Inefficient  
application  
processing



## For Citizens



Confusion over  
eligibility and  
requirements

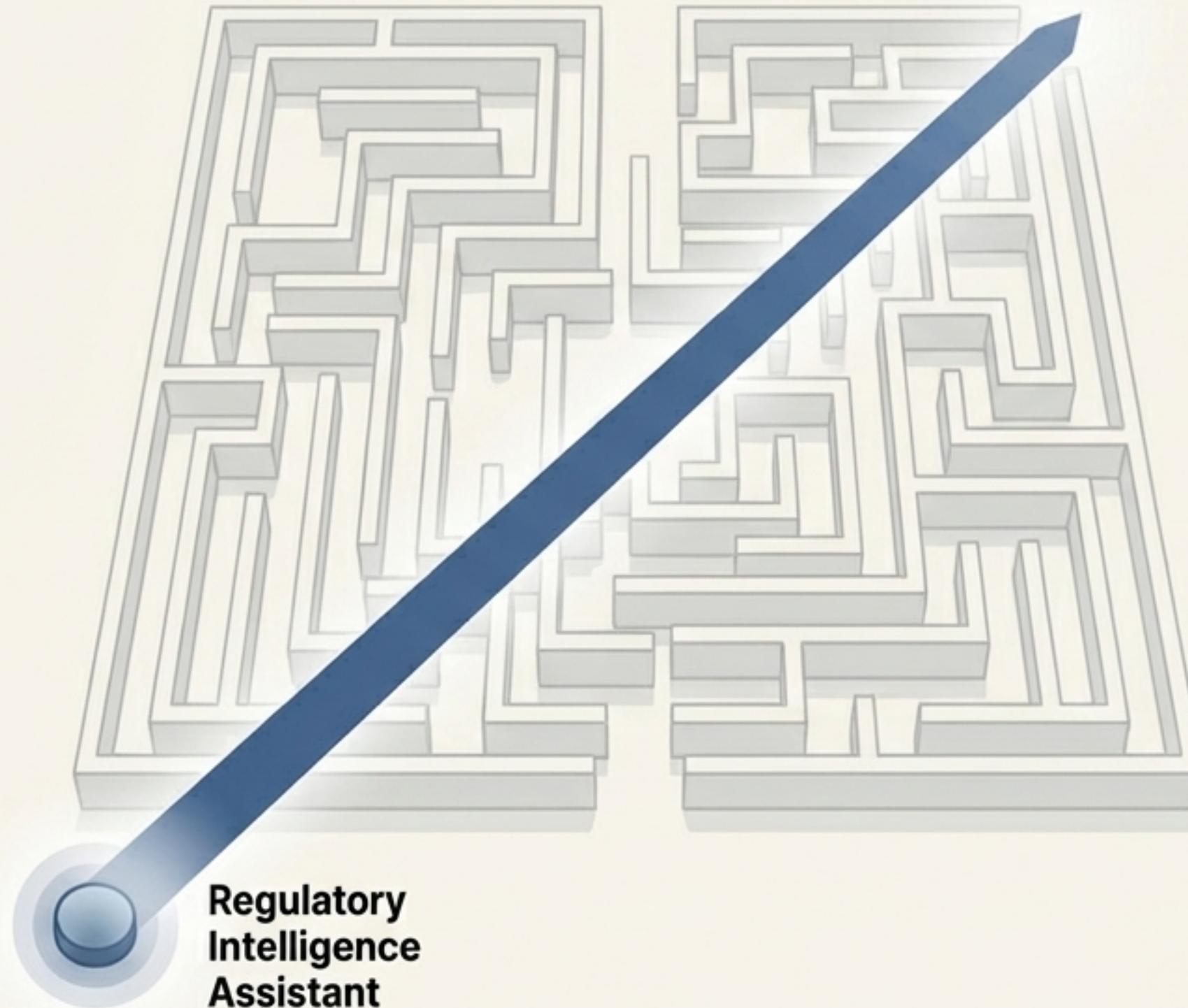


Difficulty  
self-serving



Barriers to  
accessing  
government  
programs

# Our Solution: A Guiding Light Through the Maze



The Regulatory Intelligence Assistant transforms convoluted legal text into clear, actionable intelligence, empowering users with:

- **Clarity:** Instant answers in plain language.
- **Confidence:** AI-powered validation and cited sources.
- **Compliance:** Proactive checks to ensure accuracy.

**Target Impact Highlight:** We aim for a **60-80% reduction** in time spent finding relevant regulations and a **50-70% reduction** in compliance errors.

# Five Pillars of Intelligent Navigation

Our system is built on five interconnected capabilities that work together to deliver comprehensive regulatory clarity.



## Regulatory Knowledge Graph

Maps the intricate connections between laws, policies, and precedents.



## Semantic Search

Delivers relevant answers to natural language questions, not just lists of documents.



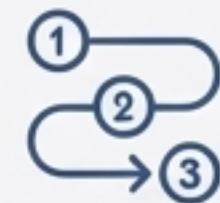
## AI-Powered Q&A

Provides direct, plain-language answers with verifiable citations and confidence scores.



## Proactive Compliance Checking

Automatically extracts requirements and validates information in real-time.



## Guided Workflows

Offers step-by-step assistance to navigate complex processes and applications.

# From Legal Jargon to Plain Language: The AI Q&A in Action

Technology: Powered by a Retrieval-Augmented Generation (RAG) system using the Gemini API.

User Asks

Can a temporary resident apply for employment insurance?

AI Responds



Yes, temporary residents can apply for employment insurance if they have a valid work permit. According to Section 7(1) of the Employment Insurance Act, benefits are payable to insured persons who meet the eligibility requirements, which include being authorized to work in Canada.



[Employment Insurance Act, S.C. 1996, c. 23, s. 7\(1\)](#)



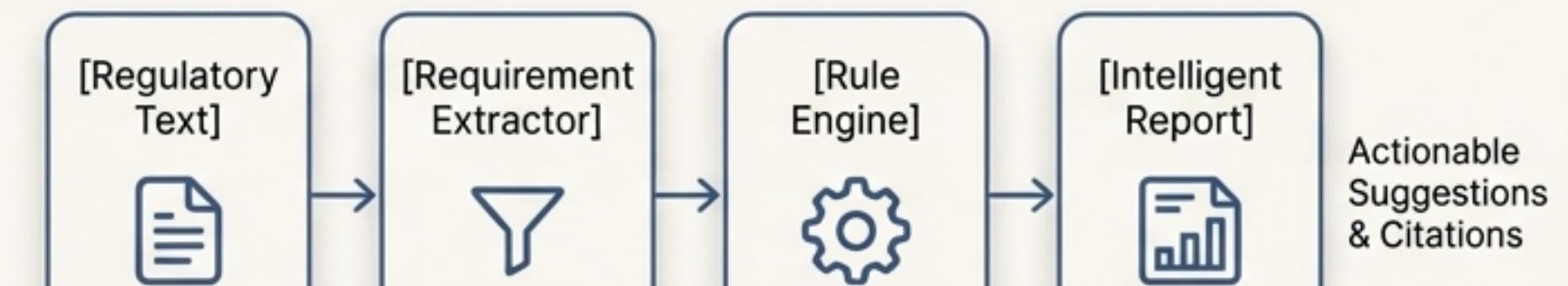
Confidence Score: **High**

# From Reactive Audits to Real-Time Validation

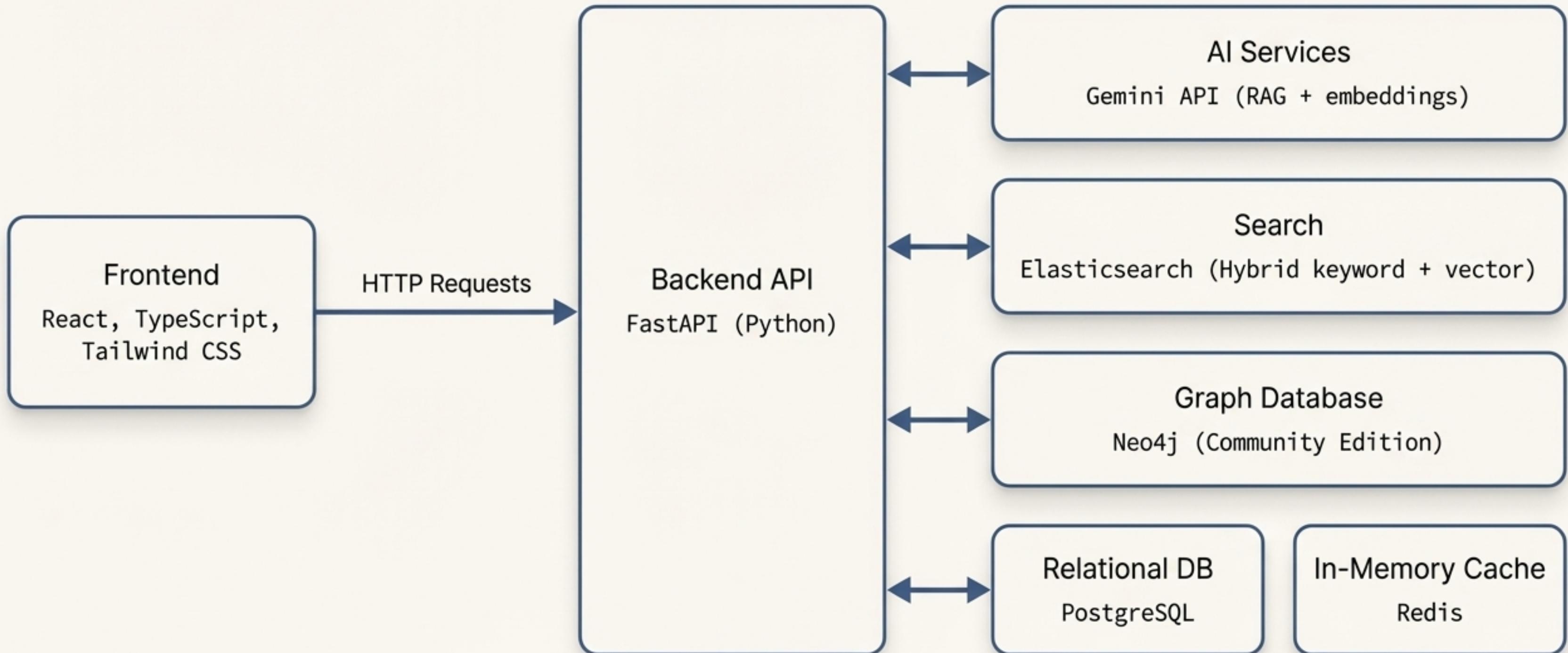
A 3-tier system (Requirement Extractor → Rule Engine → Compliance Checker) designed for accuracy and performance.

## Key Technical Capabilities

- **Automatic Requirement Extraction:** Identifies 4 pattern types (mandatory, prohibited, conditional, eligibility) directly from regulatory text.
- **Real-Time Field Validation:** Sub-50ms response time for 8 validation types (e.g., pattern, range, conditional) as users type.
- **Comprehensive Checks:** Full validation with rule caching, confidence scoring (0.5-0.95), and 4 severity levels (critical, high, medium, low).
- **Intelligent Reporting:** Generates actionable reports with issue descriptions, regulatory citations, and suggestions for resolution.



# The Blueprint for Intelligence: A Modern and Scalable Architecture



# From Concept to Code: Our 2-Week MVP Sprint

Timeline: November 17 - December 1, 2025

## Week 1: Foundation & Knowledge (Days 1-7)

**Phase 1:** Setup, Neo4j Graph, DB Schema —  **COMPLETE**

**Phase 2:** Document Ingestion & Graph Population —  **IN PROGRESS**

**Phase 3:** Hybrid Search & Gemini RAG System —  **IN PROGRESS**

## Week 2: Features & Demo (Days 8-14)

**Phase 4:** Compliance Engine & React UI —  **IN PROGRESS**

**Highlight:** Compliance Checking Engine Backend —  **COMPLETE**

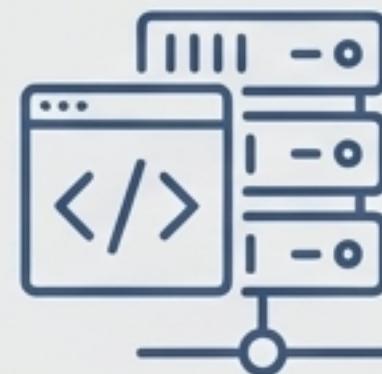
**Phase 5:** Testing, QA & Bug Fixes — **UPCOMING**

**Phase 6:** Demo Prep & Documentation — **UPCOMING**

**Key takeaway\***: Foundational backend, database, knowledge graph schema, and the complex compliance engine were completed in the first week.

# A Balanced Team of Builders and Innovators

A dedicated 4-person team with clearly defined parallel work streams to maximize velocity.



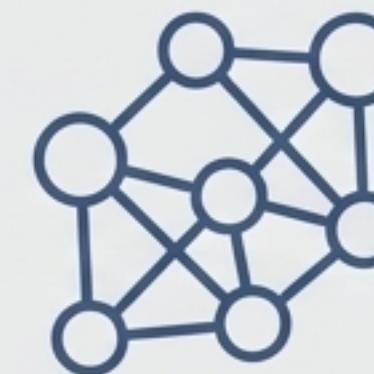
Role Title:  
**Full-Stack Lead**

Responsible for the React frontend, FastAPI backend, and overall system integration. (Assigned to Stream 1A & 4A)



Role Title:  
**AI/ML Engineer**

Focuses on NLP, the Gemini RAG system, and legal language processing. (Assigned to Stream 2B & 3B)



Role Title:  
**Backend/Graph  
Engineer**

Owns the Neo4j knowledge graph, data pipelines, and ingestion. (Assigned to Stream 1B & 2A)



Role Title:  
**Frontend/UX Specialist**

Designs and builds the user-facing search interface and guided workflows. (Assigned to Stream 3A & 4B)

# A Paradigm Shift in Regulatory Efficiency

Our solution is designed to deliver measurable improvements in both speed and quality for public services.



**-60-80%**

Reduction in time to find relevant regulations.



**-50-70%**

Reduction in compliance errors.



**-40-60%**

Faster application processing time.



**+70%**

Increase in self-service success rate for citizens.



**>95%**

Target citation accuracy for AI-generated answers.

# Empowering Every Stakeholder in the Regulatory Ecosystem



## Caseworkers

Quickly find applicable regulations and check application compliance in seconds, not hours. Get guided workflows for complex cases.



## Policy Analysts

Research the regulatory landscape, track changes, and analyze policy impacts with a complete, interconnected view of the data.



## Citizens

Understand government requirements with plain language explanations, self-assess eligibility, and get step-by-step guidance.

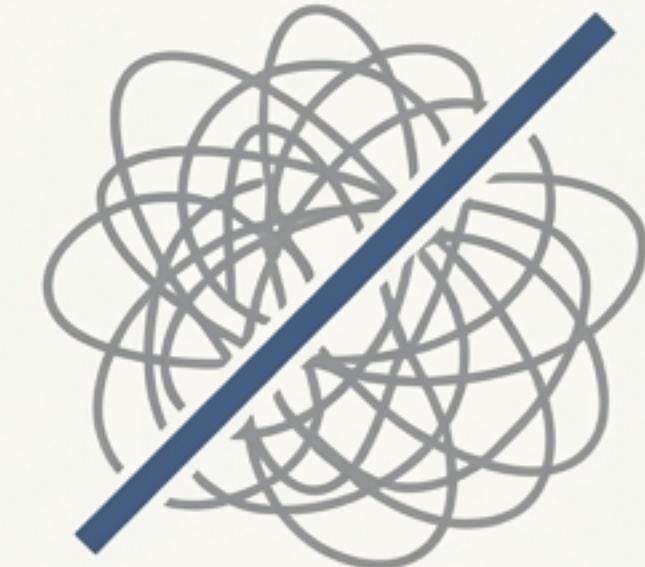
# Beyond the MVP: A Platform for Governance Innovation

The current MVP is the foundation for a more comprehensive platform. Our architecture is designed to support future growth.



# Regulatory Intelligence Assistant

Making government clearer, faster, and more effective by transforming regulatory complexity into actionable intelligence.



For collaboration or further details, please refer to our project documentation.